IN THE CLAIMS:

1. (currently amended) A multimode electrochemical sensing array comprising a semiconductor chip having formed thereon:

A. an Ion Selective Field Effect Transistor, said transistor having an exposed Gate for contact with a test solution when immersed therein, said Gate being surrounded by, but spaced from, a conductive surface that serves as both an electrode and a light shield for the transistor;

B. a plurality of electrodes spaced remotely from said transistor, at least one of said electrodes being connectable in circuit with said conductive surface and with an external current source to provide a current for electrochemical determination of ~~a parameter~~ two or more parameters of said solution.

2. (original) A multimode electrochemical sensing array according to claim 1 in which said current source is polarized to provide a titrant in the vicinity of said Gate.

3. (original) A multimode electrochemical sensing array according to claim 1 in which said current source is polarized to provide a titrant in the vicinity of said at least one remotely spaced electrode.

4. (original) A multimode electrochemical sensing array according to claim 1 in which said remotely spaced electrodes includes comprise a first pair of electrodes, each of a first area , and a second pair of electrodes, each of a smaller area than said first area, said electrodes being connectable in circuit with an external current source and an external voltage meter to provide conductivity measurements of a test solution in which they are immersed.

5. (original) A multimode electrochemical sensing array according to claim 1 in which said remotely spaced electrodes include at least one electrode for performing oxidation/reduction measurements with respect to an external reference electrode.

6. (original) A multimode electrochemical sensing array according to claim 1 in which said remotely spaced electrodes include at least one electrode connectable through a potential regulating element to said conductive surface for limiting the potential on said surface.

7. (original) A multimode electrochemical sensing array according to claim 6 in which said potential regulating element comprises a varistor.

8. (original) A multimode electrochemical sensing array according to claim 1 in which said remotely spaced electrodes include at least one electrode connectable to ground to thereby connect a test solution to ground potential when desired.

9. (original) A multimode electrochemical sensing array according to claim 1 in which said at least one electrode is connectable in circuit with an external source of constant current.

10. (original) A multimode electrochemical sensing array according to claim 1 in which said at least one electrode is connectable in circuit with an external source of current that increases during its application.

11. (original) A multimode electrochemical sensing array according to claim 1 in which said at least one electrode is connectable in circuit with an external source of current that increases linearly during its application over at least some range thereof.